

Serial No. 08/472,876

Docket No. TRD 001 JA

REMARKS

The Board of Patent Appeals and Interferences (the "Board") raised new grounds for rejecting pending claims 2, 5, 9, 14, 15, 24, 28, 31, 33-35, 37, 38, 40 and 43-53 under 35 U.S.C. §112, first and second paragraph, in their decision mailed June 25, 2003 (Paper No. 51). Applicants respectfully traverse the Board's new grounds for rejection.

In particular, the Board found that the pending claims failed to particularly point out and distinctly claim the subject matter which the Applicants regard as their invention, because the claims (1) do not expressly define the term "reference frequency", (2) do not convey in express terms how the "enhanced audio signal" is to be "recognizable", and (3) do not convey in express terms how the enhanced audio signal "exhibits a perceptively improved" harmonic quality and sound source separation compared to audible sound reproduced from the input audio signal.

Each of the exemplary circuits disclosed in the present application, as filed, inherently produce an amplitude versus frequency response curve. Such a curve can be easily produced by the person of ordinary skill by transmitting a range of individual electronic audio signals through the particular circuit, where each audio signal has a single frequency that is different from each of the other audio signals and all of the audio signals have the same amplitude. The amplitude of each of these single frequency audio signals will change according to the frequency response curve inherent to the inventive circuit. The resulting change in amplitude of each of these audio signals can then be plotted, versus its corresponding frequency, to form the frequency response curve for the particular circuit. The frequency response recited in the present claims broadly describes the shape of each of these frequency response curves.

More particularly, the Board stated that the disclosure (i.e., the as filed application) does not provide any guidance for ascertaining what the "reference frequency" may be.

The claimed high frequency enhancement (i.e., "increase in amplitude as per increasing frequencies from a reference frequency toward the high end up to an amplitude peak at a high frequency") starts at a frequency. It is submitted that the "reference frequency" is simply a term used to refer to the frequency at which the harmonic enhancement begins for the high frequency

Serial No. 08/472,876

Docket No. TRD 001 IA

enhancement. The harmonic enhancement begins when the circuit starts to change the amplitude of the audio signal's frequencies. When there is a low frequency enhancement (for example, see claims 33, 37 and 40), the "reference frequency" can also indicate where the low frequency enhancement ends (i.e., where the circuit stops changing the amplitude of the audio signal's low frequencies).

In addition, the Board stated that the instant specification (i.e., the as amended application) does not convey in express terms, or provide guidance on, how the "enhanced audio signal" is to be "recognizable" as the input audio signal "enhanced."

Whether the enhanced audio signal is recognizable as an enhanced version of the input audio signal may involve a degree of human subjectivity; however, the issue is not whether the enhancement is perceptible, but whether sound produced from the enhanced audio signal is recognizable as having come from the sound that was used to produce the input audio signal. This language was originally added to the claims to distinguish over the Furui circuit, which completely changes the input audio signal (white noise or a pulse) into an audible speech output signal that is clearly unrecognizable from the original input signal (see Fig. 3.2 on page 28 of Furui). Therefore, it is submitted that such a recognition does not involve a significant amount of human subjectivity, especially when the input audio signal being enhanced is that of music, vocals, singing and other such sounds. Accordingly, it is respectfully submitted that such language does not fail to properly set out the metes and bounds of the protection being solicited.

The Board further stated that the instant specification does not provide any guidance as to how one may ascertain whether or not the harmonic quality and sound source separation is "perceptively improved."

It is submitted that such a perceptible improvement does not involve a significant amount of human subjectivity, especially when the input audio signal being enhanced is that of music, vocals, singing and other such sounds. To have any commercial significance, a circuit that produces the recited frequency response must produce an enhancement to the audio signal being

Serial No. 08/472,876

Docket No. TRD 001 1A

processed that would be subjectively desirable to a human listener. The present circuit non-uniformly distorts electronic audio signals of music, vocals, singing and other such sounds that are transmitted therethrough so that their frequencies have non-uniform (i.e., do not have the same) amplitudes when converted into audio sound. None of the prior art of record indicates that the inherent harmonics or frequencies that make-up such audio signals would be enhanced in any way by distorting the audio signal in accordance with the claimed invention. On the contrary, the prior art teaches electronic audio signal processing circuits for processing an electronic audio signal, such as that of music, vocals, singing and other such sounds, so that its frequencies are substantially at the same amplitude (i.e., are normalized) before being converted into audible sound. The Applicants are the first to recognize the beneficial effect, i.e., a harmonic enhancement, of non-uniformly amplifying the frequencies of such electronic audio signals in accordance with the present claims. Therefore, it is submitted that the present invention is a pioneer invention that deserves the scope of protection currently recited by the present claims. Accordingly, it is respectfully submitted that such language does not fail to properly set out the metes and bounds of the protection being solicited.

CONCLUSION

For the foregoing reasons, applicant respectfully submits that claims 2, 5, 9, 14, 15, 24, 28, 31, 33-35, 37, 38, 40 and 43-53, as amended herein, are in condition for allowance. It is submitted that no new matter has been added by any of the amendments.

Respectfully submitted,

Date: 8/25/03

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